* Mathematics 20-1
* Unit Six
* Systems of Equations and Inequalities
* Unit 6 Worksheet

 Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Solve for the following questions in the space provided. Marks will be given for work shown so be sure to show your work at all times.

 **Section 8.1**

1. Use the graph to solve the system of equations. Then, write the system of equations represented in each graph.

**a) b)**

 2. Solve each system of equations by graphing. Express answers to the nearest hundredth.

**a)** *x*2  8*x*  *y*  12  **b)** *y*  2*x*2  *x*  1

*x*2  *y*  8 *y*  *x*2  9*x*  8

 3. The ages of Max and his father add up to
35 years. Max’s father’s age is the same as five more than the square of Max’s age.

**a)** Write a system of equations to represent this situation. Define your variables.

**b)** Solve the system graphically. Are all possible solutions meaningful? Explain.

**c)** How old are Max and his father?

**Section 8.2**

1. Solve each system of equations by substitution. Verify your solutions.

**a)** 3*x*  *y*  4  0 b) *y*  *x*2  3*x*  14

2*x*2  4*x*  *y*  2  0  *y*  3*x*2  5*x*  18

2. Solve each system of equations by elimination.

**a)** 3*x*2  *x*  3*y*  8 **b)** *y*  2*x*2  *x*  1

*x*  3*y*  9 2*y*  2*x*2  *x*  1

3. Consider the following system of equations.

*x*2  6*x*  *y*  *k*  0

3*x*  *y*  *k*  0

1. Determine the value of *k* if a solution
is (3, 2).

**b)** Determine the second solution.

**Section 9.1**

**1.** Which ordered pairs are solutions to each given inequality?

**a)** *x*  3*y*  18

**A** (3, 5) **B** (0, 0) **C** (5, 3) **D** (5, 5)

**b)** 0  2*x*  5*y*

**A** (5, 2) **B** (2, 5) **C** (5, 2) **D** (2, 5)

**2.** Consider each inequality.

 **i)** Express *y* in terms of *x*. Identify the slope and the *y*-intercept.

 **ii)** Indicate whether the boundary should be a solid line or a broken line.

**iii)** Use technology to graph the inequality.

**a)** 2*x*  7*y*  14 **b)** 5  *x*  3*y*  0

 **3.** Ben is buying snacks for his friends. He has $10.00. The choices are apples for $0.80 and muffins for $1.25.

**a)** Write an inequality in two variables to model this situation. Define your variables.



1. Graph the inequality.

**c)** Why is (5, 4.8) not a solution?

4. Determine the inequality that corresponds to the graph.



**Section 9.2**

 **1.** Given the graph of *f* (*x*)  (*x*  1)(*x*  7), solve the following.



a) (*x*  1)(*x*  7)  0 b)(*x*  1)(*x*  7)  0 c**)**(*x*  1)(*x*  7)  0

**2.** Is the value of *x* a solution to the given inequality? Show your work.

**a)** *x*2  3*x*  5, *x*  0 **b)** (*x*  4)(*x*  3)  7, *x*  0

 **3.** Determine the solution to each inequality.

**a)** (*x*  1)(*x*  5)  0 **b)** 8*x*2  2*x*  15  0

.

**c)** *x*2  4*x*  3  2*x*2

 **4.** Given the function *f* (*x*)  *x*2  6*x*,

**a)** determine the zeros of the function

1. solve the inequality *f* (*x*)  0

**c)** solve the inequality *f* (*x*)  5

**Section 9.3**

**1.** Which ordered pairs are solutions to the given inequality?

**a)** *y*  *x*2  4*x*  3

**A** (2, 1) **B** (0, 0) **C** (3, 2) **D** (1, 1)

**b)** *y*  *x*2  6*x*  4

**A** (2, 7) **B** (0, 0) **C** (2, 5) **D** (7, 2)

 2. Write an inequality to describe each graph. The given equation for each boundary is part of the solution.

**a)**  **b)**

3. Graph each quadratic inequality.

**a)** *y*  (*x*  5)2  4 **b)** *y*  (2*x*  1)2